A multilevel dyadic study of the impact of retirement on self-rated health:

Does retirement predict worse health in married couples?

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**ABSTRACT**

**Objectives**: This study examined the effects of retirement on self-rated health for married couples, using interdependence and social stratification theoretical frameworks.

**Methods**: Dyadic multilevel modeling of data (*N* = 2,213 non-Hispanic couples) from 1992-2010 of the Health and Retirement Survey.

**Results**: Retirement was associated with worse self-ratings of health (SRH) short-term for both husbands and wives during the first couple of years of retirement. In addition, the longer husbands (but not wives) were retired, the more their SRH worsened. Cross-spouse effects varied by gender: when wives retired, their husbands’ SRH improved short-term, but when husbands retired their wives’ SRH improved long-term. Spouse education moderated the relationship between years since spouse’s retirement and SRH for wives.

**Discussion**: Practitioners can use this information to help married couples through retirement planning and transitions. Results suggest that models of retirement in couples should pay greater attention to gender and other social stratification factors, spousal interdependence, and length of time since retirement.

Keywords: retirement, married couples, socioeconomic status, self-rated health, longitudinal analysis

A multilevel dyadic study of the impact of retirement on self-rated health:

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On average, people who reach age 65 can expect to live another 19.2 years (National Center for Health Statistics [NCHS], 2011). The lengthening of life expectancy means that more adults will experience retirement. About 50% of adults withdraw from the labor force by age 63, and this increases to 75% by age 70 (Munnell, 2011). Yet whether health improves or declines after retirement, by what mechanisms, and for whom, is not established. As Social Security and Medicare continue to undergo reform, empirically-based information about retirement’s impact on health is needed to inform policy. If retirement has a negative impact on health, Social Security reforms that encourage delayed retirement can promote better health outcomes and thus lower Medicare expenditures. On the other hand, delayed retirement may worsen health for some people, and thus increase Medicare claims upon program eligibility and enrollment. Such information can also assist practitioners helping couples through retirement planning and transitions.

This study focuses on the individual and cross-spouse impact of retirement on global self-rating of health (SRH) among married couples, and whether the impact varies by gender and other social stratification factors. Self-rated health is an important outcome as it is strongly associated with functional limitations (Idler, Russell & Davis, 2000), disease diagnoses (Ferraro, Farmer & Wybraniec, 1997), and mortality (Idler & Benyamini, 1997). In addition, there is evidence that SRH is based on more than objective health status (e.g., health comparisons, health behaviors, emotional well-being, capacity for social engagement), especially for older adults (Ferraro & Feller, 1996).

Although this study investigates retirement as a predictor of health change, poor health (of oneself or one’s spouse, if married) can prompt the decision to retire. Retirement may or may not reflect preference or planning. Consequently, it is important for studies to control for health prior to retirement and health-related reasons for retirement.

*Self-Rated Health and Retirement*

Retirement’s impact on health has received relatively little attention compared to the factors that predict retirement decisions. Conclusions about the impact of retirement on health can be influenced by a number of factors, including length of time since retirement (Gall, Evans, & Howard, 1997; Haynes, McMichael, & Tyroler, 1987), occupation (Haynes et al., 1987), and work-related stressors and rewards (Wheaton, 1990). Also, as with most studies, methodological considerations -- such as conceptualization and measurement of retirement and health, sample characteristics, and statistical power -- can influence results.

We identified five longitudinal studies that examined the impact of retirement on SRH. Dave et al. (2008) found worse SRH post-retirement for both men and women (although the decline was greater for men), while Westerlund et al. (2009) found worse post-retirement SRH for men but not women. Rijs, Cozijnsen, and Deeg (2012), Gall et al. (1997; all-male sample), and Mojon-Azzi, Sousa-Poza, and Widmer (2007) found no impact of retirement on SRH. It is important to note that the three studies that failed to find an impact of retirement on SRH had smaller sample sizes (N = 117 – 557) than the two studies that found a negative effect (samples of ≈7,700 – 14,700). Length of time since retirement ranged from one to seven years. Longitudinal studies that examine health within the first years of retirement may capture changes due to retirement adjustment, while those that examine retirement over a longer period may reflect aspects of retirement routine.

*Retirement in the Marital Context*

Couples’ retirement is under-researched, but scholars are increasingly recognizing the importance of dyadic inquiry in many arenas (Ekerdt, 2010; Sayer & Klute, 2005). One argument for studying retirement in the marital context is that 64.8% of those aged 50-74 are married with their spouse present (U.S. Census Bureau, 2011). Also, consistent with the life course perspective of “linked lives” (Elder, 1998), for married persons retirement by either spouse has potential consequences for household income (Coile, 2004), daily schedules (Yogev, 2002), health insurance coverage (Coile, 2004), marital quality (Davey & Szinovacz, 2004), and depressive symptoms (Szinovacz & Davey, 2004a, 2004b). Couples often plan for retirement together and 30% to retire within a year of each other (Ho & Raymo, 2009; Moen, Huang, Plassmann, & Dentinger, 2006). Life-course transitions such as retirement occur within the context of a couple’s shared past, including decision-making patterns (Smith & Moen, 2004), child-rearing (Szinovacz, 2000), gender role orientation (Smith & Moen, 2004), division of household labor (Szinovacz, 2000), and work histories (Ho & Raymo, 2009).

Interdependence theory (Rusbult & van Lange, 2003; Thibaut & Kelley, 1986) also argues for treating an event such as retirement and its outcomes (such as health) as couple-level phenomena. This theory posits that feelings, actions, or outcomes for partners, especially close intimate partners, are interconnected (Kelley et al., 2003). In research on married couples and health, explanations for interdependence include assortative mating (Wilson, 2002), social control and support (Rook & Ituarte, 1999), marital quality (Umberson, Williams, Powers, Liu, & Needham, 2006), shared behavioral and environmental risk factors (Wilson, 2002), and couple-centered motivation to adopt positive health behaviors (Lewis et al., 2006).

*Influence of Social Stratification Factors on SRH and Retirement*

Social stratification theory (House et al., 1990; O’Rand, 2001) posits that society is stratified on the basis of socioeconomic status and other factors such as gender, age, and race.

Position within the societal hierarchy provides differential access to desirable resources such as health. There is ample evidence that lower income (NCHS, 2011), lower wealth (Singh-Manoux, Ferrie, Lynch & Marmot, 2005), fewer years of education (Singh-Manoux et al., 2005), being Black (NCHS, 2011), and being Hispanic (NCHS, 2011) predicts worse SRH.

Work and retirement are also influenced by social stratification (Flippen, 2005). For example, Blacks, those with lower education, and those who are older are more likely to be unemployed than those with higher positions in the society hierarchy (i.e., Whites, those with higher education, those who are younger, respectively; U.S. Bureau of Labor Statistics [BLS], 2009). Lower position in the societal hierarchy also reduces the likelihood of having a job with health and retirement benefits (U.S. BLS, 2007).

Little is known, however, about the relative importance of social stratification factors as possible moderators of the relationship between retirement and SRH. Ozawa and Choi (2002) have found that income was a significant predictor of post-retirement health impairment (i.e., diagnoses of health problems) for Whites (but not for Blacks). In an all-male sample, Waldron (2001) found that men who had higher education, those who were married, and those who were White had significantly higher probabilities of living longer than men with lower education, who were not married, and who were not White. Given that retirement research has focused mainly on individuals, even less is known about the role of social stratification among married couples.

*Other Predictors of Self-Rated Health*

Those who smoke (Ferraro et al., 1997; Ruo et al., 2006), have higher BMI (Ferraro et al., 1997), are physically inactive (Bailis, Segall & Chipperfield, 2003), unmarried (Cummings & Jackson, 2008), drink alcohol (Shooshtari, Menec & Tate, 2007), have chronic health conditions (Ferraro et al., 1997), have mobility limitations (Ferraro et al., 1997), or report more depressive symptoms (Ruo et al., 2006) also rate their health worse. These risky behaviors and health conditions are more likely to occur among those occupying lower positions in the societal hierarchy (e.g., NCHS, 2011). Consequently, social stratification also may influence SRH indirectly, through risky health behaviors or disease and impairment (often with younger onset; House et al., 1990; NCHS, 2011).

*Purpose of the Present Study*

This study analyzed dyadic, longitudinal survey data (pre- and post-retirement) from married couples and treated the health outcomes of spouses as interdependent. Two hypotheses were tested: 1) Based on prior research (Dave et al., 2008), we hypothesized that retirement will have a negative impact on one’s health; 2) Based on interdependence theory, we hypothesized that a spouse’s retirement will also have a negative spillover impact on the other partner’s health. None of the previous longitudinal studies on retirement and health focused on these cross-spouse effects; 3) This study tested whether lower position in the societal hierarchy amplifies the relationship between retirement and worse SRH, based on findings from Ozawa and Choi (2002) and Waldron (2001).

**METHODS**

*Design and Sample*

We used the first ten waves (1992-2010) of the Health and Retirement Study (HRS), an on-going biannual study funded by the National Institute on Aging (NIA U01AG009740) and conducted by the University of Michigan. The purpose of HRS is to learn about the health and economic status of individuals from pre- to post-retirement (Institute for Social Research [ISR], 2008). This study used de-identified, publicly available Version L of the HRS (2011) data prepared by the RAND Corporation (St. Clair et al., 2011), and did not require review by the University of Missouri’s Institutional Review Board.

The target population for HRS in 1992 was non-institutionalized men and women born 1931 to 1941 living in the contiguous United States, with oversamples of Blacks, Hispanics and Florida residents (ISR, 2008). If the selected respondent was married or partnered, his or her spouse/partner was automatically eligible to participate in the study, regardless of age. The initial

1992 HRS sample size was 12,654 respondents from 7,608 households.

For the present study, a sample of 2,213 non-Hispanic married couples (284 Black couples and 1,929 White couples) was selected where both spouses participated in the 1992 HRS. At least one spouse had to be employed full- or part-time (not self-employed) at baseline, and the other spouse could not be categorized as completely retired on the RAND labor force measure (i.e., this spouse could be working, unemployed, partly retired, disabled, or out of the labor force for an extended period [e.g., “homemaker”]). Couples were excluded from future waves if they separated, divorced, or were widowed, or if one of the spouses was not interviewed or had proxy responses. These sample selection criteria allowed focus on post-retirement health trajectories for non-Hispanic White and Black married couples and controlled for potential confounds (e.g., differences in SRH due to marital disruption).

There was preliminary evidence that people who stayed in the study for all ten waves were different than those who were lost due to attrition. Of the 2,213 couples in the study initially, 745 (33.7%) couples were lost over time due to mortality of one or both spouses and 503 (22.7%) couples were missing one or more waves of data for other reasons. Husbands and wives with attrition both reported significantly worse baseline SRH, compared to respondents in couples who provided data for all ten waves. For both husbands and wives, race (being Black), older husband age, lower spouse education, lower baseline couple income, lower baseline couple assets, higher baseline couple debt and being a smoker at baseline increased the odds of being in a couple that was lost at later waves due to attrition.

*Measures*

*Self-Rated Health (Outcome).* Respondents rated their overall health as excellent, very good, good, fair or poor (higher scores = better health).

*Time*. Time was coded as the number of years since the baseline interview.

*Retirement*. A single-item asked whether individuals considered themselves retired (partially or completely) or not retired (reference group). Self-defined retirement reveals the mindset of individuals regarding their employment in a way that labor force participation retirement measures do not (Gustman & Steinmeier, 2000). In longitudinal studies, an event (such as retirement) can change the elevation of a trajectory, its slope, or both (Singer & Willett, 2003). If the average SRH trajectory changes between the observation before retirement and after retirement (compared to those not retired), this suggests retirement has a short-term impact on SRH. If retirement has a long-term impact on health, the rate of change in SRH for those who retire will become increasingly different over time from those who did not retire.

To test short-term (ST) impact, variables were created to represent the effect of one’s retirement (retired = 1, not retired = 0) on one’s own health (ST Retirement) and the cross-spouse effect on the partner’s health (Spouse ST Retirement). Individuals could retire multiple times over the course of the study, and each retirement could have a short-term impact on one’s own health and the spouse’s health. Years since first retirement (LT Retirement) was used to test the long term impact of one’s retirement on one’s own health and the cross-spouse effect on the partner’s health (Spouse LT Retirement). Until the first wave after retirement, this variable was coded 0. Starting with the first wave after retirement, this variable was coded as years since wave of first retirement.

*Social Stratification Factors*. Two dummy variables were created for gender (Sayer & Klute, 2005): husband (1 = yes, 0 = no) and wife (1 = yes, 0 = no). These variables help distinguish whose equation (husband’s or wife’s) is being modeled. Other variables were coded as follows: self-defined race (0 = White/Caucasian, 1 = Black/African American), age at baseline, baseline years of education (0-17+), couple income (total income from all sources for both spouses for each interview), couple assets (in dollars; each interview; excluding secondary residence), and couple debt (in dollars; each interview; excluding secondary residence). For income, assets, and debt the base 10 log transformation (after adding a nominal value of $250 to each response) was used to address non-normality of distribution prior to centering. To facilitate multilevel model convergence and interpretation of results, age, education, income, assets, and debt were centered around the baseline sample means.

*Control Variables*. This study included four control variables: body mass index (BMI; kg/m2; centered around sample mean), current cigarette smoker (1 = yes), saying that poor health was an important reason for retirement (1=very or moderately important at any wave; 0 = not important, or never completely retired), and depressive symptomatology. Depressive symptomatology was measured using eight symptoms from the Center for Epidemiologic Studies–Depression (CES-D) Scale (Wallace & Herzog, 1995) with dichotomous response categories (yes/no). After reverse coding two positively-valenced items, possible range of scores was 0-8 (higher scores = more symptoms). BMI, smoking, and depressive symptomatology were all modeled as time-varying.

*Missing Data*

Procedures used by ISR and the RAND Corporation to reduce or impute missing data are discussed in St. Clair et al. (2011). After applying the sample selection criteria, only three variables were missing data in this study: self-rated health, CES-D, and BMI. At most 51 observations were missing for any of these variables at any wave, which represents less than 2% of the observations for that variable. Given the relatively small amount of missing data remaining at this point, no imputation was performed (except by IRS and RAND). Couples where one or both spouses had missing data were eliminated from the analyses for that wave.

*Data Analysis Strategy*

Data for this longitudinal, dyadic study are hierarchical in nature (i.e., repeated measures within couples). Analyses used multilevel modeling (MLM) with *HLM 6.08* software and full maximum likelihood estimation. MLM takes into account clustering of observations within individuals and couples, computes corrected standard errors, and retains cases for any wave with complete data. Based on calculations using *Optimal Design 1.77* (Liu, Spybrook, Congdon, Martinez, & Raudenbush, 2006), power for this study exceeded 0.80 (assuming alpha < 0.05, up to ten repeated measures, two individuals within each couple, minimum of 440 couples at Level-2, ICC > 0.05, and effect size of 0.20).

Using a longitudinal multivariate outcomes or dual-intercepts model (Sayer & Klute, 2005), separate regression lines for husbands and wives were estimated simultaneously while controlling for within-dyad dependence in SRH. Gender indicator variables were entered for husband and wife at Level-1 and the HLM default intercept was deleted. Husbands and wives also had separate variables for time since baseline (i.e., linear rate of change in SRH per year). The Level-1 model represents the effects of time and time-varying predictors on SRH, while the Level-2 model captures the moderation effects of time-invariant individual- and couple-level predictors on the relationship between the Level-1 predictors and SRH (Sayer & Klute, 2005). In the dual-intercepts approach to modeling dyadic data, there are two levels (i.e., within dyads and between dyads; Cook & Kenny, 2005; Sayer & Klute, 2005) rather than three (i.e., time, individual, couple).

An unconditional growth model (Model 0) was run first, in which baseline SRH (i.e., intercept) and linear rate of change in SRH (i.e., time slope) for husbands and wives were entered as random effects. Results revealed moderate spousal interdependence in baseline SRH (ICC = .23, *p* < .01) and significant variability in baseline SRH and its slope for both spouses (*p* < .01). These unconditional results justified multilevel investigation of retirement status in subsequent conditional models.

Model 1 consisted of the intercept and time slope for husbands and wives, plus the retirement variables (ST retirement, LT retirement, Spouse ST retirement, and Spouse LT retirement) at Level-1. The SRH intercept and time slope are the effects for respondents in couples where neither spouse retired. The short-term and long-term effects of retirement (individual and cross-spouse) were specified as random effects; all other effects were specified as fixed. The residuals for the random effects represent the amount of variability around the average impact of one’s own retirement and one’s spouse’s retirement on each spouse’s SRH.

Model 2 added social stratification factors of race, age, spouse’s age, education, spouse’s education, couple’s income, couple’s assets, and couple’s debt – as predictors of the intercept and slope. These variables were also added as interaction effects with all retirement variables. In Model 2, the intercept and time slope represent the effects for respondents where all predictors are zero (i.e., neither spouse retired; average age and education for husbands and wives; White; average couple income, assets and debt).

Model 3 added depressive symptomatology, smoker status, and body mass index, and poor health as important in the decision to retire (at any wave) as predictors of the SRH intercept. Poor health as reason for retirement was also entered as a moderator of the short-term and long-term impact of one’s own retirement on SRH. For the sake of parsimony, all non-statistically significant interactions were deleted and Model 3 was re-estimated; these are the results presented in Table 2 for Model 3. In Model 3, the intercept and time slope represent the effects for respondents where all predictors are zero. Below is a simplified version of the multilevel equation for Model 3 (with all interactions) tested by level.

Level-1 Model (Within-Dyad) for Husbands/Wives

Yti = π1i(Intercept) + π2i(Time) + π3i(ST & LT Retirement) & + π4i(Spouse ST & LT Retirement) + π5i(Couple Income, Assets, and Debts) + π6i(BMI, smoker status & CES-D) + π7i(Couple’s income & assets & debts \* ST & LT Retirement) + π8i(Couple’s income & assets & debts \* Spouse ST & LT Retirement) + *eti,*

where *Yti* is the expected self-rated health at time *t* for dyad *i,* and *eti* are the within-dyad residuals.

Level-2 Model (Individual- and Couple-Level Time Invariant Variables):

π1 = β10 + β11\*(Black) + β12\*(Husband/Wife retired due to poor health) + β13\*(Husband & Wife Age) + β14\*(Husband & Wife Education)

π2 = β20 + β21\*(Black) + β22\*(Husband/Wife retired due to poor health) + β23\*(Husband & Wife Age) + β24\*(Husband & Wife Education)

π3 = β30 + β31\*(Black) + β32\*(Husband/Wife retired due to poor health) + β33\*(Husband & Wife Age) + β34\*(Husband & Wife Education) + *r*3*i*

π4 = β40 + β41\*(Black) + β42\*(Husband/Wife retired due to poor health) + β43\*(Husband & Wife Age) + β44\*(Husband & Wife Education) + *r*4*i*

π5 = β50

π6 = β60

π7 = β70

π8 = β80

In Models 1-3, the Level-2 residuals (*r*3i and *r*4i) represent the amount of variability around the average short-term and long-term impact of one’s own retirement and one’s spouse’s retirement on each spouse’s SRH. These random effects (four for husbands and four for wives) tell us whether one’s own retirement (or the spouse’s retirement) affects the SRH of some husbands or wives more than others. Level-1 residuals were assumed to be normally distributed with a mean of zero and constant variance of σ2 and Level-2 residuals were assumed to be distributed multivariate normally, so that each element had a mean of zero, some variance, and covariance among all pairs of elements (Sayer & Klute, 2005). Nested models were compared using the difference -2 log-likelihood ratio test to determine whether the deviance statistic is significantly reduced between models (Raudenbush & Bryk, 2002).

**RESULTS**

Table 1 presents descriptive statistics and tests for gender differences at baseline.

Average age at baseline was significantly higher for husbands than wives. At baseline, 9% of husbands and 3% of wives reported being partly retired (those who said that they were completely retired at baseline were excluded from the sample). Wives reported better self-rated health, were less likely to be a smoker, had lower BMI, and reported more depressive symptoms at baseline than husbands.

[Table 1 about here]

Bivariate correlations between study predictors showed the strongest association between couple’s income and couple’s assets (*r* = .50, *p* < .01) and couple’s debts (*r* = .25, *p* < .01). For husbands and wives, respectively, self-rated health was associated at baseline with race (*r* = -.12 and *r* = -.19), couple’s income (*r* = .25 and *r* = .26), couple’s assets (*r* = .24 and *r* = .27), couple’s debts (*r* = .12 and *r* = .10), age (*r* = -.08 and *r* = -.09), education (*r* = .29 and *r* = .25), BMI (*r* = -.13 and *r* = -.22), smoker status (*r* = .13 and *r* = .13), and depressive symptomatology (*r* = -.30 and *r* = -.32), all *p* < .01.

*Self-Rated Health Trajectories, Controlling for Retirement and Other Factors*

MLM results are presented in Table 2, in separate columns for husbands and wives (although estimated simultaneously). Coefficient magnitudes indicate the difference in SRH for each one-unit higher on the predictor, and negative coefficients indicate worse SRH. After entering all covariates (Model 3), the average SRH at baseline was 2.86 for husbands and 2.90 for wives (close to “very good”), when all other predictors were zero (i.e., neither spouse retired; mean age, education, and BMI for husbands and wives; White; average couple income, assets, and debt; did not retire due to poor health; no CES-D symptoms). On average, SRH got worse by .02 points per year for husbands (time slope) and by .03 points per year for wives, when all other predictors were zero.

[Table 2 about here]

*Impact of Retirement on Self-Rated Health Trajectory*

Consistent with our first hypothesis, retirement predicted worse SRH for both husbands and wives during the first two years of retirement, controlling for all other predictors. In Model 3, SRH was .09 points worse during the first two years of retirement (ST Retirement) for both husbands and wives than it was pre-retirement, compared to SRH change for those who did not retire. Retirement also had a significant negative long-term impact (LT Retirement) of .02 points per year on SRH for husbands, so that health was getting worse more rapidly for retired husbands than for husbands who did not retire. For wives, retirement initially had a negative long-term impact on SRH as well, but with the addition of the health control variables this effect was no longer significant. Wives who reported retiring due to poor health reported significantly worse health decline in the long-term post-retirement than wives who did not report that poor health was an important factor in their decision to retire. An alternative model that tested possible nonlinear long-term effects for both the person's own retirement and the spouse's (results available on request) found no significant nonlinear effects.

*Impact of Spousal Retirement on Self-Rated Health Trajectory*

Contrary to our second hypothesis that spousal retirement would predict worse SRH for the other partner, during the first two years of a wife’s retirement (Spouse ST Retirement), her husband’s SRH actually improved by .05 points, compared to husbands whose wives did not retire (Husbands in Table 2). There was no significant short-term impact of a husband’s retirement on the wife. Retirement of husbands did have a statistically significant long-term impact on wives. For each year husbands were retired (Spouse LT Retirement), the average self-rated health of wives improved by .01 points. There was no long-term cross-spouse effect of retirement for husbands.

*Moderation Results for Social Stratification*

Other than gender differences, there was very limited evidence that retirement’s impact on SRH varies by social stratification. Higher than average husband education moderated the long-term cross-spouse effect of retirement on wives’ SRH. Having a husband with higher education predicted better SRH for wives long-term after the retirement of their husband, but the magnitude of this effect was very small.

*Other Predictors of Self-Rated Health*

Social stratification did have significant main effects on SRH (Table 2), with worse baseline health being reported by respondents who were Black, older, lower education (both self and spouse), lower couple income, and lower couple assets. These effects held regardless of gender. In addition, respondents with higher BMI, current smokers, and higher depressive symptomatology reported worse health at baseline. Of all the main effects, race, smoker status, and depressive symptomatology had the largest impact on SRH.

*Model Fit and Random Components*

Calculation of the proportional reduction in errors of prediction (PRE) was performed using the methodology outlined in Bickel (2007).Model 1 (retirement variables) resulted in a 1% PRE for husbands and 0.3% for wives over Model 0 (the null model). Model 2 (addition of social stratification variables) resulted in 12% PRE for husbands and 13% for wives over Model 0. Model 3 (addition of body mass index, smoker status, depressive symptomatology, and retirement due to poor health; and deletion of non-significant interactions) resulted in a 19% PRE for husbands and 23% for wives, over Model 0.

Comparison of deviance values also indicated that subsequent models improved the model fit. Model 2 significantly improved the fit over Model 1, Δχ2(*df* = 87) = 2698.22, *p* < .01. Model 3 was a significant improvement over Model 2, Δχ2(*df* = 51) = 2424.38, *p* < .01.

There was significant variability around the short-term impact of retirement for husbands on their own SRH, and around the short-term cross-spouse impact of wives retirement on their husband’s SRH (see Table 2). This indicates that the health of some husbands is more affected over the short-term by retirement (their own and their spouse’s) than it is for others. The fact that these random components remain significant in Model 3 indicates that the variability between husbands has not been fully explained by our predictors. The random components for the long-term individual and cross-spouse effects of retirement are not statistically significant for husbands. None of the random components were statistically significant for wives.

*Graphical Summary of Self-Rated Health Trajectories by Couples’ Retirement Status*

To better visualize the short- and long-term effects of retirement on SRH, Figure 1 graphs the average estimated SRH trajectories of husbands (panel a) and wives (panel b) for four dyadic retirement scenarios: 1) neither spouse retired during the study, 2) couples in which the husband retired but the wife did not retire, 3) couples in which the wife retired but the husband did not, and 4) couples in which both spouses retired. These estimated trajectories hold all predictors other than retirement status at zero. The choice of 1994 for the individual impact and 1998 for the cross-spouse impact of retirement was made solely on the basis of visual presentation. Since there were short- and long-term individual and cross-spouse effects, it was helpful to set the hypothetical timing of retirement early enough and separate so that both aspects of retirement could be modeled.

[Figure 1 panels a and b about here]

**DISCUSSION**

This study conducted multilevel modeling of dyadic, longitudinal survey data from married couples to examine the critical issue of health changes post-retirement. This will be of increasing importance as life expectancy lengthens and Baby Boomers retire (NCHS, 2011). Research that examines retirement and health within the context of marriage is still relatively rare but sorely needed because of the interdependence of spouses and because the majority of adults approaching retirement are married (U. S. Census Bureau, 2011).

Our results indicate that retirement is associated with worse self-rated health (SRH) trajectories within the first two years of retirement for both husbands and wives. This is possibly due to increased household responsibilities and reduction in feelings of control, personal space, and routines (Smith & Moen, 2004; Szinovacz, 2000; Yogev, 2002). Idler and McLaughlin (2002) suggest theoretically that those who perceive themselves as having greater control over their lives may have higher SRH and be likely to practice better health and coping behaviors, but our study did not test these intervening mechanisms.

Self-rated health became progressively worse for husbands the longer they were retired. This finding is consistent with the findings of Dave et al. (2008) and Westerlund et al. (2009) on men (who were not necessarily married) and retirement. Retirement had a negative long-term impact for wives, but this effect was mediated by depressive symptomatology, body mass index, and smoker status. This would argue for the need for future research to examine changes in health behaviors post-retirement, and may suggest additional benefits of interventions to prevent and treat depression, smoking and high BMI during retirement years.

While we hypothesized that social stratification would moderate the relationship of retirement to self-rated health, with the exception of gender differences in the short-term and long-term effect of the spouse’s retirement and our finding that having a husband with higher than average education predicted better self-rated health for wives long-term after the retirement of their husband, none of the social stratification moderation effects were statistically significant. Social stratification was, however, significantly related to self-rated health at baseline for both husbands and wives. Inclusion of social stratification factors also reduced the magnitude of the short-term retirement effect slightly (but did not eliminate it) for both spouses. These results suggest that social stratification factors may influence retirement in ways that the present design cannot detect (e.g., through the timing of retirement or the reasons for retirement).

The study findings support interdependence in couples. There was a positive association at baseline between SRH of husbands and wives, wives’ retirement was associated with an improvement in husband’s SRH short-term, and husbands’ retirement was associated with an improvement in wife’s SRH long-term. It is possible husbands and wives invest more time and attention in activities that promoted the health and well-being of their spouse (e.g., nutritional and/or exercise changes). For some couples, marital conflict around the wife’s employment may have ended with her retirement, thus improving the husband’s health. More research is needed to test these and other possible reasons for the short- and long-term cross-spouse effects. Also, this study did not model dyadic timing of spousal retirement (e.g., joint retirement, husband retiring before or after wife), which can impact marital conflict and adjustment (Davey & Szinovacz, 2004; Szinovacz & Davey, 2004b).

Our study design captures both retirement adjustment (short-term impact) and the retirement experience as a new phase of life (long-term impact). Operationalizing long-term impact of retirement as linear rate of change in health since the *first* wave in which the respondent was coded as retired averages health change that might occur from multiple retirements (Curl & Townsend, 2008). By averaging the effect across all retirement transitions, some of the complexity of the relationship between retirement and health is masked. In addition, lack of data in the Health and Retirement Study (HRS) on the exact timing of retirement means that SRH changes could have pre-dated retirement status change in the two-year period between interview waves. While health-related variables and retirement due to poor health are included as controls in this study, this analysis approach does not fully address endogeneity and reverse causality issues that may result in biased estimates. A quasi-experimental design could be used to address this issue in future research.

Sample selection criteria excluded Hispanics, those of racial backgrounds other than non-Hispanic Whites and Blacks, and mixed race couples, because numbers in HRS were too few. Generalizability of our findings to these other ethnoracial groups is unknown. In addition, at baseline, at least one spouse had to be working full- or part-time in a non-self-employment situation, because research by Karoly and Zissimopoulos (2004) suggests that the self-employed over age 50 have different characteristics than salaried workers. Together, these sample selection criteria were designed to strengthen conclusions, but each criterion also narrowed generalizability of the findings. Although missing data were minimal after sample selection criteria were applied, couples were excluded from the study if either spouse was missing information on the selection criteria (e.g., marital status, labor force status, completed interview at baseline). The impact of this on the generalizability of our results is unknown.

Preliminary analyses found some evidence of selective couple-level attrition. Couples included at baseline but who did not provide data for all ten waves were in poorer health at baseline, so we may be underestimating the full relationship between retirement and health. Future research should explore the impact of non-random attrition. For example, the fact that being Black predicted higher odds of attrition suggests that the present results may not generalize as well to African American couples, and relationships between retirement and health in minority populations merit further research. These attrition results also suggest the need for future research to delve even more deeply into the longitudinal connections between pre-retirement health, health as a reason for retirement, and post-retirement health.

In conclusion, this study addressed gaps in knowledge regarding the impact of retirement on SRH in married couples over time. By modeling the impact of retirement simultaneously for husbands and wives, this study addressed the cross-spouse effects of retirement on SRH. Baby Boomers are expected to have a major impact on both retirement and health systems. Although study of the impact of retirement on self-rated health involves many challenges, research in this area can inform policy, clinical practice, and couple’s retirement decision-making. Practitioners can be best equipped to educate and intervene with couples experiencing the retirement transition if armed with information that takes spousal interdependence, the importance of social stratification factors, and time since retirement into consideration.

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Table 1

*Descriptive Data for Individual-Level and Couple-Level Characteristics at Baseline*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Characteristics | Husbands (N = 2,213) | |  | Wives (N = 2,213) | | |
|  | *M* | *SD* |  | *M* | | *SD* |
| Individual-Level |  |  |  |  | |  |
| Retirement status (1 = retired)a | 9% | |  | 3% | | |
| Self-rated healtha | 2.67 | 1.05 |  | 2.75 | 1.03 | |
| Agea | 55.77 | 4.53 |  | 52.07 | 5.48 | |
| Education | 12.67 | 2.95 |  | 12.71 | 2.33 | |
| Body mass indexa | 27.28 | 3.96 |  | 26.47 | 5.38 | |
| Depressive symptomatologya,b | .48 | .91 |  | .60 | 1.20 | |
| Current smoker (1 = yes)a | 26% | |  | 23% | | |
| Couple-Level |  |  |  |  | |  |
| Race (1 = Black) |  | 13% | | |  | |
| Couple’s income |  | $59,153 ($43,340) | | |  | |
| Couple’s assets |  | $232,226 ($348,354) | | |  | |
| Couple’s debt |  | $31,688 ($47,562) | | |  | |

aSignificant gender difference based on paired *t*-test or χ2 , *p* < .05. b8-item version of the Center for Epidemiologic Studies-Depression Scale (Wallace & Herzog, 1995) with dichotomous (yes/no) response options.

Table 2

*Multilevel Modeling Results of Self-Rated Health in Husbands and Wives* (*N* = 2,213 couples)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Husbands | | |  | Wives | | |
| FIXED EFFECTS | Model 1 | Model 2 | Model 3 |  | Model 1 | Model 2 | Model 3 |
| Intercept | 2.68\*\* | 2.70\*\* | 2.86\*\* |  | 2.74\*\* | 2.75\*\* | 2.90\*\* |
| Black |  | -0.15\* | -.13\* |  |  | -0.36\*\* | -0.26\*\* |
| Age (centered) |  | -0.01 | -0.01\*\* |  |  | -0.01\*\* | -0.01\*\* |
| Spouse age (centered) |  | <-0.01 | <-0.01 |  |  | <-0.01 | <-0.01 |
| Education (centered) |  | 0.06\*\* | 0.05\*\* |  |  | 0.06\*\* | 0.04\*\* |
| Spouse education (centered) |  | 0.02 | 0.02\* |  |  | 0.02\* | 0.02\* |
| Couple's incomea |  | 0.11\*\* | 0.07\*\* |  |  | 0.11\*\* | 0.07\*\* |
| Couple's assetsa |  | 0.10\*\* | 0.08\*\* |  |  | 0.10\*\* | 0.08\*\* |
| Couple's debtsa |  | <-0.01 | <0.01 |  |  | <-0.01 | <0.01 |
| ST retirementa | -0.19\*\* | -0.14\*\* | -0.09\*\* |  | -0.14\*\* | -0.11\*\* | -0.09\*\* |
| Spouse ST retirementa | -0.04 | 0.03 | 0.05\* |  | 0.03 | 0.05 | 0.03 |
| LT retirementa | -0.03\*\* | -0.02\* | -0.02\*\* |  | -0.02\*\* | -0.02\*\* | -0.01 |
| Spouse LT retirementa | <.01 | 0.01 | 0.01 |  | 0.01\* | 0.02\*\* | 0.01\*\* |
| Time slope | -0.01\*\* | 0.03\*\* | -0.02\*\* |  | -0.01\* | -0.03\*\* | -0.03\*\* |
| Time Slope\*Black |  | -0.01 | <0.01 |  |  | <0.01 | 0.01 |
| Time Slope\*Age at baseline |  | <-0.01 | <-0.01 |  |  | <0.01 | <0.01 |
| Time Slope\*Spouse age at baseline |  | <-0.01 | <0.01 |  |  | <-0.01 | <0.01 |
| Time Slope\*Education |  | <-0.01\*\* | <-0.01\*\* |  |  | <-0.01 | <-0.01 |
| Time Slope\*Spouse education |  | <0.01 | <0.01 |  |  | <0.01 | <0.01 |
| Time Slope\*Retired due to poor health |  |  | <-0.01 |  |  |  | 0.01 |
| Retired due to poor health (any wave) |  |  | 0.04 |  |  |  | -0.05 |
| Body mass index (centered) a |  |  | -0.03\*\* |  |  |  | -0.03\*\* |
| Smoker status (1 = smoker) a |  |  | -0.15\*\* |  |  |  | -0.18\*\* |
| Depressive symptomatology (CES-D) a,b |  |  | -0.18\*\* |  |  |  | -0.15\*\* |
| Spouse LT retirement\*Spouse education |  | <.01 | c |  |  | <-0.01\* | <0.01\*\* |
| LT retirement\*Retired due to poor health |  |  | c |  |  |  | -0.02\* |
| RANDOM COMPONENTS |  |  |  |  |  |  |  |
| ST Retirement | 0.46\*\* | 0.37\*\* | 0.30\*\* |  | 0.26 | 0.19 | 0.16 |
| Spouse ST Retirement | 0.33\*\* | 0.26\* | 0.21 |  | 0.16 | 0.12 | 0.11 |
| LT Retirement | <0.01 | <0.01 | <0.01 |  | 0.01 | <0.01 | <0.01 |
| Spouse LT Retirement | 0.01 | <0.01 | <0.01 |  | 0.01 | <0.01 | <0.01 |

*Note*. Results are final estimates of fixed effects coefficients with robust standard errors. All possible interaction effects between social stratification and retirement variables were tested, but only the one statistically significant interaction effects are is shown. After running Model 3, all non-statistically significant retirement interactions were removed and Model 3 was re-estimated. LT = long-term, ST = short-term. aTime varying. b8-item version of the Center for Epidemiologic Studies-Depression Scale (Wallace & Herzog, 1995) with dichotomous (yes/no) response options. cNot included in final model.

\**p* < .05. \*\* *p* < .01.

*Figure 1*. Self-Rated Health Trajectories by Gender and Retirement Status